

Patent Application
ATM-515 (7486)

REMARKS

Applicants have amended claims 18, 19 and 21 thereby placing them in conditions for allowance.

Rejection under 35 U.S.C. §103(a)

The rejection of claims 1, 3-7, 9-17 was maintained under 35 U.S.C. §103(a) as being unpatentable over McEntee, et al. (U.S. Patent No. 4,127,598, hereinafter McEntee) and Tsukuno, et al. (U.S. Patent No. 5,312,947, hereinafter Tsukuno).

This rejection is hereby traversed, and reconsideration of the patentability of herein amended claims is requested, in light of the ensuing remarks.

Claim 1 has been amended as set forth below:

1. A process for improving delivery reproducibility of a cyclosiloxane precursor to a chemical vapor deposition reactor and reducing water content in the cyclosiloxane precursor, the process comprising the steps of:

(a) providing a cyclosiloxane precursor;

(b) treating and contacting said the cyclosiloxane precursor with at least one adsorbent bed material that has an affinity for water and at least one impurity selected from the group consisting of acidic and basic impurities from said cyclosiloxane precursor for a sufficient time to reduce the water and impurities in the cyclosiloxane precursor;

(c) separating the cyclosiloxane precursor from the at least one adsorbent bed material, to produce a purified cyclosiloxane precursor, wherein the water content is less than 20 ppm;

(d) vaporizing said purified cyclosiloxane precursor; and

(e) delivering vapor of said purified cyclosiloxane precursor to said chemical vapor deposition reactor, wherein treatment of the cyclosiloxane precursor functions to prevent or minimize premature polymerization of said cyclosiloxane precursor in the chemical vapor deposition reactor and associated delivery lines and improves delivery reproducibility of the cyclosiloxane precursor.

Initially, as mentioned previously, an important and unobvious aspect of the Applicants' invention resides in the discovery or recognition of the source of the cyclosiloxane premature polymerization problem occurred during CVD process, i.e., the presence of trace amount of water, basic and/or acidic

impurities in the cyclosiloxane precursors, causing the catalytic polymerization thereof.

Therefore, the inquiry of obviousness in this case must be directed to the question of whether or not such a recognition would have been obvious to one of ordinary skill in the art prior to Applicants' invention, without the benefit of hindsight of Applicants' own disclosure in the instant specification, consistent with the court's holdings in *In re Roberts and Burch*, 176 USPQ 313, 314 (CCPA 1973) and *In re Spinnoble*, 160 USPQ 237, 243 (CCPA 1969).

None of the references cited by the Examiner even contemplates the premature polymerization problem associated with chemical vapor deposition of cyclosiloxane precursors, much less than recognizing presence of water, basic and/or acidic impurities therein as the source of such premature polymerization problem. Further, none of the cited references, alone or in combination, teaches or suggests each and every element of claim 1, and as such, do not meet the necessary requirements for rendering the presently claimed invention as obvious.

The McEntee reference only discloses removal of non-acidic and non-basic impurities, such as biphenyls, chlorinated biphenyls, vinyl chloride, carbon tetrachloride, and aromatic hydrocarbon impurities (see McEntee, column 4, lines 39-50), from impure silanes and siloxanes, which include cyclosiloxanes (see McEntee, column 5, lines 26-34). There is no discussion relating to the removal of water or the advantages thereof.

Importantly, the Tsukuno reference relates to polysiloxanes that have already been polymerized. This is in contrast to applicants' claim invention that recites a precursor. There is a difference between a precursor siloxane and polysiloxanes that are already polymerized. All the examples and discussion in the Tsukuno text relate to purification process only after polymerization. Thus, as stated above, this reference does not even contemplate the premature polymerization problem associated with chemical vapor deposition of cyclosiloxane precursors, much less than recognizing a solution. By the time, Tsukuno addresses the issue of ionic crystal removal by the addition of water, polymerization has occurred. Thus, Tsukuno is not relevant to the present invention.

There is no suggestion or motivation to combine the teachings of Tsukuno with McEntee and even if they were combinable, which of course they are not, the proposed combination would not teach or suggest each and every claimed element of the present invention. Where in the references is there any teaching or

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suggestion that reduce the water content to less than 20 ppm would remove the polymerization problem that the applicants are overcoming. Clearly there is none.

As stated above, the Office seems to be merely reinterpreting the prior art in light of applicant's disclosure, in order to reconstruct applicant's claimed invention, but without any instructional or motivating basis in the references themselves. Such approach is improper and legally insufficient to establish any *prima facie* case of obviousness. As such, applicants request the withdrawal of the obviousness rejection.

Petition for Extension and Fees Payable

Applicants are requesting a one-month extension under 37 CFR 1.136 and have included the required fee of \$120.00. A one month extension is due because applicants filed their response on July 25, 2005, two months after the issuance of the Final Rejection of May 25, 2005. The Office did not respond to applicants' response until October 11, 2005, and this late date after the three-month period starts the clock for extension fees. Applicants thus have included the fee for a one-month extension.

Applicants have added three new independent claims. However, in the process of prosecuting this application, applicants have cancelled 29 claims, three of which were independent claims, namely, claims 30, 45 and 46. Thus, no new fees are due for adding these additional claims.

The fee of \$790.00 for the Request for Continued Examination submitted herewith under the provisions of 37 CFR §1.114 and the one-month extension of \$120.00 is authorized to be charged in the attached credit card authorization form.

Authorization hereby is given to charge any deficiency or any additional amount payable in connection with this Request for Continued Examination to Deposit Account No. 08-3284 of Intellectual Property/Technology Law.

Conclusion

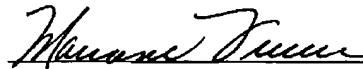
Applicants have satisfied the requirements for patentability. All pending claims are free of the art and fully comply with the requirements of 35 U.S.C. §112. It therefore is requested that Examiner Manoharan reconsider the patentability of all pending claims in light of the distinguishing remarks herein, and

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withdraw all rejections, thereby placing the application in condition for allowance. Notice of the same is earnestly solicited. In the event that any issues remain, Examiner Manoharan is requested to contact the undersigned attorney at (919) 419-9350 to resolve same.

The Office is hereby authorized to charge any additional fees determined to be properly payable for entry of this Response, to Deposit Account 50-0860 of Advanced Technology Materials, Inc.

Respectfully submitted,



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